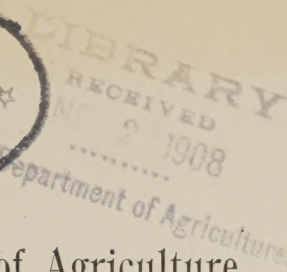
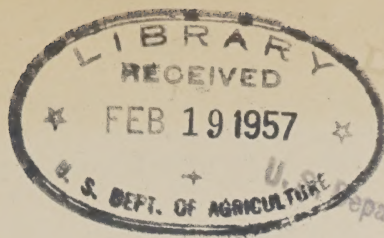


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United States Department of Agriculture,

BUREAU OF PLANT INDUSTRY,

Seed and Plant Introduction and Distribution,

WASHINGTON, D. C.

IRON COWPEA.

OBJECT OF DISTRIBUTION.

The Iron cowpea is a variety resistant to the diseases known as "wilt" and "root-knot," which cause the condition of land commonly called "pea-sickness." The seed sent out in 2-quart packages accompanying this circular was grown especially for the Department of Agriculture, in 1903, by Mr. T. S. Williams, at Monetta, S. C. It is distributed in the Southern States, primarily because it resists wilt and root-knot, and can be grown where other varieties fail. Where these diseases do not occur it should be tested for resistance to drought and for general hardiness, in which respects it is superior to other kinds.

HISTORY.

The origin of the Iron cowpea is somewhat obscure. It is believed to have originated in Barnwell County, S. C., and what is probably the same variety is now grown there under the names of "Smiley" and "Guess." It had a local reputation as a hardy variety, though the reason was not known until its remarkable resistance to disease was demonstrated by experiments made by the Department of Agriculture in the period from 1900 to 1903, on Mr. Williams's farm, at Monetta, S. C. The field used in these tests had been planted continuously in cowpeas for some years, and was thoroughly infected with wilt and root-knot. In a four years' trial over 40 other varieties have been grown besides the Iron, but all have been nearly complete failures, while the Iron has each year remained vigorous and free from disease. Pl. I, fig. 1, shows the difference in yield of unshelled peas between Iron and Black in one of these experiments.

Several hundred farmers have received seed distributed from this Department, and the reports from all who had pea-sick land have been favorable, stating that the Iron cowpea was superior to all other varieties on such land.

DESCRIPTION.

The Iron cowpea is of the Clay type. The plant is vigorous, erect or slightly trailing, with dark-green leaves. The seeds are small and hard; color buff, of varying shades even in the same pod. The time of maturing varies according to latitude. In the Gulf region it is a two-crop pea; that is, when planted early it will bear an early crop, which can be planted in time to produce a second crop the same summer. The first sowing will also remain green and bear throughout the season. In this respect it differs from the Wonderful and similar kinds, which run to vine if planted early and require to be planted late to produce a crop of peas. Farther north, in the latitude of South Carolina, its season is medium early, while in Virginia, Kentucky, and more northern States it is classed as a medium late variety. It is especially adapted to the sandy soils of the coastal plain from North Carolina to Florida and west to the Mississippi River. It is a valuable variety for soil renovation and for forage, as it will grow on disease-infected land and is a vigorous, upright plant, making a large crop of hay and adding much nitrogen and vegetable matter to the soil. It does not bear as heavily as some other varieties and should not be chosen when a large crop of peas is desired. Cowpeas are usually grown for hay and for their fertilizing value rather than for seed, and the Iron will meet these demands. Where no trouble is experienced from the cowpea wilt and root-knot a field trial of the Iron will be necessary to show whether it is better adapted to the local conditions than the existing standard varieties. Aside from its resistance to disease, the most notable quality of the Iron cowpea is its resistance to drought. It holds its leaves under adverse conditions longer than other varieties and remains green until frost. It blooms and bears continuously through the season, but as the pods do not shell out nor the peas mold picking can be deferred till late. The peas will live through the winter in the ground, and are preferred by some on account of their self-seeding quality. The hard seeds are somewhat less subject to weevil attacks than other kinds. This variety is of fair quality as a table pea.

DIRECTIONS FOR PLANTING.

If possible, select a place on land where other varieties do not succeed, in order to test its resistant qualities, and put a few rows of another variety beside it for comparison. Plant from May 1 to August 1, according to the latitude and conditions, in drills 3 feet apart, at the rate of 2 pecks per acre.

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DISEASES OF THE COWPEA.

The Iron cowpea is most noteworthy for its resistance to the cowpea wilt disease and root-knot. A full description of these diseases, with accounts of experiments with remedies, etc., was published in Bulletin No. 17, Bureau of Plant Industry, United States Department of Agriculture, and will be sent free on request. A brief account is given here to enable the farmer to recognize these troubles.

THE COWPEA WILT.

The wilt of the cowpea is common only on light or sandy soils, and occurs principally on land where cowpeas have been grown for several years. It appears about August in spots of varying size, which spread gradually over the field. The plants in these areas turn yellow, lose their leaves, and die. The stems have a reddish-brown tinge, and when broken the inside will be found discolored. Later these stems become covered with the light pink spores of the fungus which causes the disease. This fungus enters the roots from the soil and, growing upward, fills the water-carrying vessels of the stem with its threads, thus shutting off the water supply and causing the death of the plant.

Remedies.—The cultivation of the Iron pea is the best means of relief, as it will grow where all others fail. Rotation of crops for two years will give temporary relief; or, since the disease does not attack any other crop than the cowpea, velvet beans, soy beans, or other legumes may be substituted.

ROOT-KNOT.

Root-knot, like the wilt, is most injurious on sandy soil, and the two diseases are often found occurring together. It is caused by a minute nematode, or eelworm, which enters the roots and produces large, irregular swellings or galls. These very injurious enlargements should not be confused with the bacterial tubercles found on all healthy cowpea roots. The latter are small and regular in form and greatly benefit the plant by enabling it to draw nitrogen from the air. The accompanying figures illustrate this distinction. The beneficial bacterial tubercles appear on the healthy roots in Pl. I, fig. 2, while the roots in fig. 3 are deformed by root-knot.

Root-knot is also produced on several other plants by the same nematode that attacks cowpeas. Cotton, okra, peaches, and most garden vegetables are greatly injured by it. This is the most serious feature of the disease, since the cultivation of the ordinary varieties of cowpea on nematode-infected land so greatly increases the number of the parasites in the soil that succeeding cotton or other crops are much injured. The ordinary varieties of cowpea should, therefore, not be planted on such land.

Remedies.—It is hoped that work now in progress in the Department of Agriculture will result in the breeding of varieties of cotton, peaches, etc., which will be resistant to the root-knot. At present no remedy is known that will entirely free land in our Southern States from this disease. The sterilization of the soil by heat or toxic chemicals, clean fallowing, etc., have been recommended, but the best that can be done in ordinary farm practice is to adopt a rotation designed to starve out the parasites by growing a succession of immune crops, such as the Iron cowpea, beggarweed, corn, oats, or other grains, grasses, etc. A rotation like the following is suggested for cotton planters: First year, corn with Iron cowpeas between the rows; second year, either beggarweed, velvet beans, or oats followed by Iron cowpeas; third year, cotton. If necessary, cotton might also be planted the fourth year, after which the rotation should be repeated.

W. A. ORTON,
Assistant Pathologist.

Approved:

A. F. WOODS,
Pathologist and Physiologist.

REPORT RESULTS.

It is desired to know the results of all trials of the Iron cowpea, and every farmer who receives seed is requested to return the accompanying card with his name and address, signifying his willingness to report at the end of the season. Blanks will then be sent to be filled out and returned. A report will be asked for on the character of soil, whether or not infected with wilt or nematodes, manner of planting, character of season, success as a forage crop, yield as compared with other varieties, resistance to disease, etc.

A. J. PIETERS,
Botanist in Charge.

Approved:

B. T. GALLOWAY,
Chief of Bureau.
Washington, D. C.,
January 16, 1904.



FIG. 1.—COMPARATIVE YIELD OF IRON AND BLACK COWPEAS ON INFECTED LAND.
IRON, 20 POUNDS; BLACK, 1 POUND.

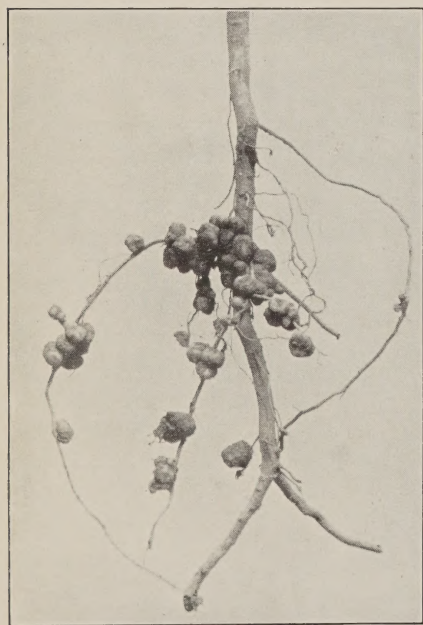


FIG. 2.—COWPEA ROOTS, WITH TUBERCLES PRODUCED BY THE BENEFICIAL NITROGEN-FIXING BACTERIA.

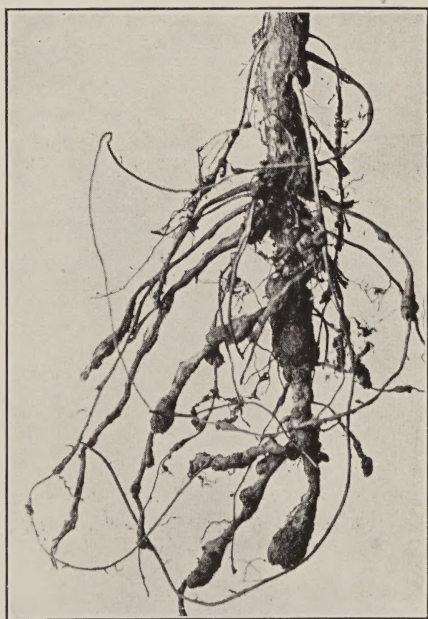


FIG. 3.—COWPEA ROOTS, SHOWING ROOT-KNOT, AN INJURIOUS DISEASE CAUSED BY NEMATODES.

